

(*Dryopteris cristata*), narrowleaf meadowsweet (*Spiraea alba*), roundleaf sundew (*Drosera rotundifolia*), rose pogonia (*Pogonia ophioglossoides*), and others. Bogs on mafic rock at Long Hope Valley, which contains the region's largest concentration of bogs, support additional rare species such as small bladderwort (*Utricularia minor*), buckbean (*Menyanthes trifoliata*), swamp saxifrage (*Saxifraga pensylvanica*), few-seeded sedge (*Carex oligosperma*), three-seeded sedge (*Carex trisperma*), twig-rush (*Cladium mariscoides*), northern white beaksedge (*Rhynchospora alba*), holy grass (*Hierochloa odorata*), orange peatmoss (*Sphagnum subsecundum*), fen peatmoss (*Sphagnum warnstorffii*), narrowleaf peatmoss (*Sphagnum angustifolium*), flexuous peatmoss (*Sphagnum flexuosum*), long-stalked holly (*Ilex collina*), and Canada yew (*Taxus canadensis*).

**Spray Cliff** communities are rare, especially in Watauga County. They occur on steeply sloping to vertical rock faces that remain wet from the spray of waterfalls. They support a collection of nonvascular plant species (mosses and liverworts), as well as herbs scattered in small soil pockets. In addition to numerous rare nonvascular plants, these highly-specialized habitats can contain rare vascular plants such as Carolina saxifrage (*Saxifraga caroliniana*). Other species that may be present include mountain spleenwort (*Asplenium montanum*), Carey's saxifrage (*Saxifraga careyana*), maidenhair fern (*Adiantum pedatum*), orange jewelweed (*Impatiens capensis*), galax (*Galax urceolata*), meadowrue (*Thalictrum* spp.), jack-in-the-pulpit (*Arisaema triphylla*), sedges (*Carex* spp.), and species from surrounding forests.

**Swamp Forest-Bog Complex (Typic Subtype)** is the typical subtype of a rare wetland community type limited to nearly flat, poorly drained bottomlands in the mountains. They differ from Southern Appalachian Bogs in structure, being a complex of forested thickets and small openings (of an acre or less) with bog vegetation. They are dominated by Canada hemlock (*Tsuga canadensis*), white pine (*Pinus strobus*), or red maple (*Acer rubrum*), with a dense thicket of great rhododendron (*Rhododendron maximum*) or mountain laurel (*Kalmia latifolia*) in the understory. Small boggy openings contain shrubs such as mountain elderberry (*Sambucus pubens*), hollies (*Ilex* spp.), and tag alder (*Alnus serrulata*); as well as wetland herbs such as northeastern mannagrass (*Glyceria melicaria*), cinnamon fern (*Osmunda cinnamomea*), royal fern (*Osmunda regalis*), prickly bog sedge (*Carex atlantica*), the sedge *Carex lurida*, turtleheads (*Chelone* spp.), skunk cabbage (*Symplocarpus foetidus*), partridge-berry (*Mitchella repens*), and swamp dewberry (*Rubus hispidus*). Several rare species may occur in these communities.

**Swamp Forest-Bog Complex (Red Spruce Subtype)** is a rare subtype dominated by red spruce (*Picea rubens*). The only good example in the state exists at Long Hope Valley. In structure and in composition it is similar to the Typic Subtype, but it includes rare northern disjunct species such as buckbean (*Menyanthes trifoliata*), long-stalked holly (*Ilex collina*), and Canada yew (*Taxus canadensis*).